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AUTHOR Lesser, Philip
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ABSTRACT

Growth of administrative components in 43 K-12 public school districts in the Saint Louis metropolitan area is reported for 1968-76. Increases in absolute numbers and ratios of administrators to teachers occurred in school districts with increasing as well as declining enrollments. Statistical analysis of public records and interviews with superintendents did not support two prominent organizational explanations for this growth: that the percentage of administrative employees declines as organization membership increases, and that the percentage of administrative employees increases as the complexity of the organization's environment increases. An alternative approach, emphasizing expansion-tendencies within administrative staffs, is suggested. (Author)

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THE ORGANIZATION OF PUBLIC SCHOOL DISTRICTS: AN INQUIRY INTO THE GROWTH OF ADMINISTRATIVE COMPONENTS

Presented at
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Prepared by

Philip Lesser
The Ohio State University
Academic Faculty of Educational Foundations and Research
122 Ramseyer Hall
Columbus, Ohio 43210

EA 011 796

INTRODUCTION

Public education in the United States is currently undergoing severe criticism in numerous arenas, and two of the more heated controversies revolve around the related charges of increasing school costs and declining levels of student achievement. While the presence or absence of these phenomena are themselves debated, school officials experience a press by unhappy patrons and politicians, as well as representatives of business and government agencies. Those aspects of schools which might be linked to costs and outcomes warrant examination.

Characteristics of school organization have long been studied for their influence on school costs and outcomes. Staffing policies in particular are significant: salaries typically represent 75-80% of current operating expenditure (March, 1978) and much of the daily experience of children in schools (including the skills and attitudes they acquire) is in some way related to the nature of the school's personnel.

School district officials make a variety of decisions regarding composition of staff: requisite skills and levels of education, compensation, and of teaching force, are just a few. In addition, they decide as to the number of administrators to be employed. While administrators typically do not "teach," and do not, then, contribute directly to student outcomes, they are considered necessary to coordinate resources in ways which facilitate achievement of school goals.

This paper is concerned with a specific aspect of school district organization: the tendency for administrative staffs to expand, relative to teaching forces. Given the higher salaries of administrators, this growth has important implications for school budgets in times of dwindling school resources. In addition, evidence associating large administrative staffs with depressed levels of student achievement has begun to appear, and this is extremely important as schools come under fire for failing to maintain/attain high standards of student achievement. The problem addressed, then, is to explain the growth in administrative components in public school

districts. The approach taken will be to examine two major theoretical explanations--one based on Organization Size, and the other on Environmental Complexity--for their usefulness in illuminating the phenomenon of administrative growth.

BACKGROUND

Administrative Components

Weber's (1974) analysis of growth of modern organizations (as well as the societies in which those organizations reside) noted the development of increasing complexity of organization and differentiation of labor. He examined the rise of hierarchical organizations based around a system of offices--or bureaus--which functioned to coordinate the increasing technical and wide-spread tasks of modern organizations, and came to believe bureaucratic forms would dominate modern societies, due to efficiency in achieving goals (which he termed a tendency towards rationalization).

Weber's (1946) prediction that industrialized societies and their organizations would become increasingly bureaucratized appears to have been correct. Bendix (1956), using the proportion of salaried employees (managers) to wage-earning employees (workers) as an indicator of bureaucratization, found that the absolute numbers of managers, as well as the ratio of managers to workers, increased in the United States, Great Britain, German, France, and Sweden during the first half of this century. Weber's theory would account for this growth by stressing the relation of increased numbers of administrators and managers to increasing number of employees (calling for more managers to coordinate activities) or the increasing complexity of modern business operations (innovative and sophisticated technologies, widely dispersed operations, or increased specialization of laber would be examples).

Bureaucratization is to be understood as referring to formal organizations, which according to Etzioni are "planned units, deliberately structured for the purpose of attaining specific goals" (1964, p. 4). The increasing division of labor and

hierarchical differentiation of members within modern formal organizations is a prominent trait in, for example, hospitals (Heydebrand, 1973b), manufacturing and commercial concerns (Haire, 1959), and labor unions (Raphael, 1967), and regularities across organizations have been reported regarding the relative size of various personnel components within organizations (Heydebrand, 1973a; Hall, and Johnson, 1967). Specifically, relative numbers of managerial or administrative employees, and direct or production employees, have been studied in a variety of settings: the relationship between those giving orders and those following orders is one of the most basic in any group, in that it influences a variety of significant concerns, such as recruitment, cohesion, control, and compliance, as well as goal-setting and attainment (Etzioni, 1975).[1]

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[1]There is a long tradition in sociology, and to a lesser extent economics, of examining the relative sizes of groups within organizations. The relationship called administrative ratio appears in a variety of forms: administrative ratio (Holdaway and Blowers, 1971), administrative intensity (Bidwell and Kasarda, 1975), and administrative-supervisory ratio (Heydebrand, 1973a), as do the constituent terms of the ratio: administrative components (Anderson and Warkov, 1961), support versus direct personnel (Freeman and Hannan, 1975) managerial versus labor (Weber, 1946), salary versus wage-earners (Bendix, 1956), and officers and men versus Admiralty officials, or dockyard workers versus dockyard officials and clerks (Parkinson, 1957). The rationale for the use of this measure will be discussed below.

Schools have been studied as formal organizations (Bidwell, 1965; Waller, 1932) in an attempt to bring to bear theoretical understandings to the problems of schooling. Studies of social relations within schools (Gordon, 1957; Coleman, 1961) or studies of organizational structures (Freeman and Hannan, 1975; Bidwell and Kasarda, 1975) are typical examples. An important thrust of these studies has been to generate theoretically-derived and empirically testable propositions which would enable us to account for organizational characteristics.

This relationship between administrative components and direct components has been explicitly studied in school organizations as the relationship between administrators and teachers; while this topic will be discussed below in some detail, for the present it need only be mentioned that there is compelling evidence that schools differ from other formal organizations regarding size and growth of administrative components.

What is the nature of growth in school district administrative structures? Table 1 displays relative growth in the numbers of teachers and administrators nationally between 1956 and 1973.

INSERT TABLE 1 ABOUT HERE

There appears to have been a striking change in the relative size of these two components, with the proportion of direct personnel (classroom teachers) who are either supervised or assisted by indirect staff (principals, etc.) decreasingly by roughly 33%. This indicates a shift in staffing policy, and in a sense, a shift in school philosophy, in that teachers and students are likely to recieve more services and supervision.

While there are few studies of the relative size of administrative and direct components in public school districts, they tend to reinforce these figures. Of direct interest to this study, however, are findings reported by Anderson and Mark (1977), regarding the ratio of administrators to teachers in the Saint Louis metropolitan area, between 1968 and 1974. They found that this ratio increased both in those rings[2] with growing

[2]The notion of ring was used by Burgess to describe the process of "succession" of neighborhoods, by which expansion in metropolitan areas proceeds outwards from the urban core, through a series of concentric and semi-circular areas, termed rings. See Anderson and Mark (1977) for a fuller discussion of this concept; they aggregated school districts within each of six rings, emanating westwards from the Saint Louis central business district.

TABLE 1
STUDENTS, TEACHERS, AND ADMINISTRATORS
IN THE U.S.
1956-1973

	1956	1973
Students	27,500,000	45,700,000
Teachers	1,354,958	2,155,448
Administrators[1]	108,318	247,514
Students/teacher	20.29	21.20
Students/administrator	253.88	184.64
Teachers/administrator	12.51	8.71

Source: Standard Education Almanac: 1976-77

[1]Principals, assistant principals, superivisors and consultants, librarians, counselors

enrollments as well as rings with declining enrollments. Similarly, preliminary analysis of the date used in this show that in 40 of the 43 school districts (some declining, some expanding in enrollments) examined for the period 1968-9 through 1976-7, the number of administrators per teachers increased, indicating a higher concentration of administrative staff.

There are a number of reasons why the relative size of administrative components in school districts would be of interest.[3] First, as salaries account for between seventy-five and eighty percent of current operating expenditures (March, 1978), increasing the ratio of administrators to teachers causes costs to rise (as administrators earn higher salaries). Public debate over school policy frequently revolves around the high costs of school. In New York City, for example, a report issued the office of the Comptroller disclosed that while

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[3] For the present discussion, administrative components in public school organizations are composed of non-teacher professional educators (that is to say, those with state-issued certificates) such as superintendents, principals, etc. who provide support and managerial services.

spending $500 per pupil more than the average of twenty-two other major cities, New York was not only spending less on instruction than the sample average, but was spending more on administrators, and had a higher proportion of admininstrators to students than the average (Bureau of Performance Analysis, June 23, 1977). Increasing numbers of administrators cause costs to rise for two reasons: not only are administrative salaries typically higher than teacher salaries, but as administrators do not work with children directly, the per pupil cost is increased without direct effects on students (Bidwell and Kasarda, 1975).

Superintendents and other policy-making officials also use the concept of ratios between staff components when planning for staff size or budget allocations. Especially in times of dramatic staff reductions, teacher morale and militancy is a concern, and superintendents are aware of the potential threats to morale caused by disproportionate lay-offs in the teaching

staff relative to the administrative staff. Information regarding relative changes in these components, then, is of interest to teachers and their organizations, school district officials, and patrons of school districts.

Another reason for looking at administrative ratios revolves around the notion that increasing administrative presence will enhance the possibilities that school districts will achieve their goals. This claim, however, is essentially unsupported by evidence. While the general notion is that administrators make schools more effective, it is difficult to produce unambiguous support for this claim. The few studies available cast doubt on the link between size of administrative staffs (relative to teaching staffs) and school effectiveness (almost universally measured by student achievement.)

In a study of 104 Colorado school districts, Bidwell and Kasarda (1975) examined the effects upon reading and mathematics achievment test scores of, among other variables, the ratio of administrators (superintendents, principals, supervisors, directors, business managers, coordinators,

and all of these groups' assistants) to teachers, as well as the ratio of professional support staff (guidance counselors, librarians, psychologists, social workers, speech therapists, and nurses) to teachers. The rationale was that high administrative ratios would lower student achievement (by diverting resources from instructional functions), while high professional support staff ratios would increase student achievement by increasing information and services to teachers and students. Their findings show the predicted negative relationship between administrative intensity and achievement, as well as a non-significant positive correlation between achievement and professional support staff ratios. Their explanations for the limited relationship between professional support staff ratios and achievement are that these staff spend too little time with students, generate information and services not considered useful by teachers, and concentrate their efforts on those few students at either end of the ability spectrum (thus not affecting the majority of students).

There are, to be sure, several limitations to this study (such as the use of cross-sectional data rather than longitudinal data, making it impossible to assess over time the effects upon districts due to changes in staff, and only allowing comparisons across districts; or, lack of standardized testing across districts) and the authors emphasize that the findings must be interpreted with caution. However, extensive reviews of school effects literature (Spady, 1973; Averch et al, 1974) generally support these findings. Averch's and associates' extensive review of 21 studies lists only two which looked at influence of administrative staffs upon pupil achievement, two more which examined the influence of other non-teaching staff ("special staff," "pupil/professional ratios") and two more which used the variables "auxiliary service man-years" or "administrative man-years." With one exception, all showed negative and generally significant association with student achievement.

Most evidence, then, has not been able to support the policy of increasing administrative presence as a means of increasing student achievement. This is not to say, of course, that administrators cannot influence students or schooling in a positive manner. The argument is simply that aggregated at the district level (where most staffing decisions are made) there is no compelling evidence. It needs to be emphasized that student achievement is a troublesome indicator of school quality: it is plagued with numerous and persistent problems such as class and culture bias or measurement error. And, of course, it is only one outcome of schooling. However, it is generally held to be a major outcome, and one prominent in much school policy debate. It is also one of the few measures widely collected and comparable across districts. Consequently, it is (along with cost) essentially the only measure available by which districts might be compared in terms of performance.

The importance of the failure of studies to demonstrate relationships between administrative presence and school effectiveness is heightened

within the current context of popular calls to go "Back to Basics" resulting from a perceived decrease in school effectiveness. Taxpayers' initiatives to limit public spending (such as California's Proposition 13) are a reality and school districts are cutting back services. Schools are under political pressure to cut costs and improve services; any process, such as that of increasing the ratio of administrative staffs to teaching staffs which increases the costs side of schooling without improving outcomes, such as achievement, is important to understand. The following section presents a discussion of prominent theories in the organization literature which attempt to account for growth in administrative components.

TWO THEORIES OF ADMINISTRATIVE GROWTH

1) Organization Size

The theory. The influence of the size of an organization's membership upon the size of its administrative component is the most commonly

encountered explanation in the literature. This position may be traced to Weber (1946), who argued that the number of officials would increase in modern, hierarchical organizations. As discussed previously, this speculation appears to be borne out. However, Blau (1972) argues that while growing organizations might add managers, they are added at a proportionately lower rate than are production workers. As a result, the administrative ratio decreases as organization size increases. A factory, for example, can add production workers without a one-to-one corresponding increase in superviosry personnel. This situation obtains, so Blau reasons, because large organiztions are considered more efficient at coordinating and managing employees than are small ones. This might be a result of having officials whose sole function is the specialized one of directing workers, unlike smaller organizations whree individual managers are involved in a wide variety of tasks (sales, research, accounting, etc.) and have presumably less expertise or less logistical support (computers, clerical staff, etc.). The general hypothesis is that as organizations size increases, the administrative ratio decreases.

The general evidence. The majority of studies of formal organizations support the notion that membership and administrative ratios are inversely related. An early study by Melman (1951) examined census data for American manufacturing firms during the first half of this century and found that larger size firms had a smaller percentage of employees in managerial or administrative positions than did smaller size firms.

A key study in this line of research was conducted by Anderson and Warkov (1961); this examination of 49 Veterans Administration hospitals has provided the impetus for several other studies concerning administrative staff size. They looked at the relative size of the administrative component (the percent of employees designated "General Hospital Administration," including the Manager's Office, the Registrar's Office, and the fiscal, personnel, and supply units) as it related to organization size (the Annual Average Daily Patient Load, or ADPL). Their results, displayed in Table 2 show that the larger the ADPL,

the smaller the percentage of administrative employees. Similar inverse relationships in hospitals are reported by Heydebrand (1973b),

INSERT TABLE 2 ABOUT HERE

Tosi and Patt (1967), and (Blau, 1972).

The smaller administrative component relative to total membership has been reported in a variety of settings. Blau (1972) found this relationship in employment security agencies, government finance departments, department stores, universities and colleges, and hospitals, as did Noell (1974) for government bureaucracies, Indik (1964) for package delivery stations, automobile dealerships, volunteer fire companies, industrial labor union locals, and non-partisan political organization chapters; additional support may be found in Pondy (1973), Rushing (1973), and Hawley, Boland, and Boland (1965).

The primary exceptions to these findings are those Raphael (1967), in a study of Cook county, Illinois, labor union locals. She reports that the relative size of the administrative component

Table 2

ADMINISTRATIVE RATIOS AND ORGANIZATION SIZE
IN VETERANS ADMINISTRATION HOSPITALS,
1956

	Annual Average Daily Patient Load					
	TB Hospitals			General Hospitals		
	Under 250	250-400	Above 400	Under 600	600-900	Above 900
Number of hospitals	5	8	6	12	9	9
Mean % of administrative employees	15.6	12.0	10.7	14.0	12.0	11.0

Adapted from Anderson and Warkov (1961)
N=49

increased as membership increased. A more complex set of figures is reported fron an analysis of German industrial statistics (Bendix, 1956). He considers the proportion of salaried employees to wage-earning employees the clearest indication of bureaucratization, and reports that while the proportion of administrative to production staffs in larger industrial firms was lower than in smaller firms, the converse is the case for technicians (that is to say, larger firms have a higher proportion); that the proportion of salary-to-wage-earners is only minimally effected by the size of the firm (gains in one proportion offset by declines in the other.)

The school district evidence. Evidence from school district studies is more ambiguous than evidence from the study of other organizations. One clear statement of relationships between administrative ratios and school district size (usually a measure of attendance or enrollment) comes from Koehler and Ismail's (1975) analysis of the 667 districts in the U.S. Office of Education's Elementary-Secondary General Information Survey, in which they report that no relationship--positive

or negative, existed. Most studies, however, are more cloudy. Holdaway and Blowers (1971), for example, report that for 41 school districts in Western Canada, larger districts had smaller administrative ratios than smaller districts; however, a longitudinal re-analysis of their data shows no clear relationship (as will be discussed below). Bidwell and Kasarda (1975) report on 104 Colorado school districts and show a correlation of -.39 for administrative ratios (discussed previously) and school district size; however, the correlation between size and professional support staff ratios was .23. Hendershot and James (1973) report inverse relationships between administrative-production ratios in 229 school districts and school district size, but a re-analysis of their data will be discussed below. Other mixed findings were reported by Lindenfeld (1961) who shows that in 322 school districts, the proportion of total staff assigned to supervisory positions increases with larger size (in medium and small districts), but is inversely related in the largest districts.

There are, in addition, several studies which make a case for growth in administrative ratios being associated with larger school district size, as well as growth in school district size. Terrien and Mills (1955) found that numbers of administrators and non-administrative personnel were positively correlated in California school districts. Gittell and Hollander (1968) report that administrative staff as a percent of the number of classroom teachers increased between 1955-6 and 1965-6 in Detroit, Baltimore, and New York, while decreasing in Chicago and Philadelphia. And as mentioned previously, a longitudinal study by Anderson and Mark (1977) found increases in school districts' administrative staffs in the St. Louis metropolitan area in rings (regions) with growing enrollments as well as declining enrollments.

Discussion. The number of studies in this line of research indicates the prominence of this framework in accounting for administrative growth.

A compelling critique by Gouldner (1961) however, suggests that we reexamine this notion of size as the driving mechanism in administrative growth. First,

he suggests that accepting a size argument precludes alternative responses to administrative growth; that is to say, increased growth is determined when organizational membership increases, rather than being only one alternative. As he points out, not all large-scale human endeavors have been bureaucratic; he indicates that the building of the Egyptian pyramids was not carried out by a bureaucracy "in any serious sense of the term" (1963, p. 74).

Second, Gouldner argues that perhaps size is not important per se, but is important only insofar as it relates to other factors, because

> The point is that when a social scientist accepts "size" as the explanatory factor, instead of going on to ask what there is about size that makes for bureaucracy, he is making an analytic decision. It is not a formulation unavoidably dictated by the nature of the data itself (p. 75).

Consequently, he writes, the use of "size" as an explanation does not move us away from gross causes to those more closely connected with the object of interest (which in this case is growth of administrative components).

In addition to these analytic concerns, there are methodological concerns which make the predicted

inverse relationship between organization size and administrative ratios unclear. The following discussion focuses primarily upon those studies dealing with school districts.

To begin, definitions of the term "administrator" vary across studies. Anderson and Mark (1977) use superintendents, supervisors, principals, librarians, guidance counselors, pupil personnel; Terrien and Mills used superintendents, assistants and staff, principals, and "business managers and the like" (1955, p. 12); and Holdaway and Blowers (1971) used several different combinations of central office, building level, planning, and pupil personnel. Hannaway (1977) and Freeman and Hannan (1975) did not use a ratio, rather, they relied upon number of administrators as the dependent variable. Regarding the independent variable of size, average daily attendance of pupils is commonly used (Freeman and Hannan, 1975; Bidwell and Kasarda, 1975), as is enrollment (Gittell and Hollander, 1968; Hendershot and James, 1972), and four different definitions (number of schools, number of pupils, number of professional and administrative staff, and number of classroom teachers) by Holdaway and Blowers (1971). While these definitions are functionally similar (for example,

enrollment typically correlates with number of teachers, as will be discussed below) the possibility of slippage does occur.

A major weakness of many studies supporting the inverse relationship between organization size and administrative ratios is the use of cross-sectional analysis, which Haire describes as producing "not a curve of growth representing the dynamics within an organization, but a set of static measurements arranged by size" (1959, p.292). There are actually two related arguments involved in the size explanation. The first involves levels of administrative size (and levels of organization size) and argues that larger organizations have smaller administrative ratios than smaller organizations (Anderson and Warkov, 1961; Indik, 1964; Tosi and Patt, 1967).

A more complete argument, both for theoretical understanding and for guiding administrative policy, would revolve around a second relationship, a relationship of changes in levels of administrative size and changes in levels of organization size. Clearly, the second class of information is more complete. Cross-sectional analysis (comparing levels

in different organizations) cannot inform the key question, "What happens to the administrative staffs within an organization when the size of that organization changes over time?" Were we to find, for example, that larger organizations have smaller administrative ratios, we must infer that reducing an organization's size will decrease its administrative ratio. A longitudinal analysis, however, would show what happens to administrative staffs over time as organization size changes.

This distinction between longitudinal and cross-sectional approaches takes on additional importance because the studies supporting inverse relationships between school organization size and administrative ratios tend to be cross-sectional while the studies suggesting that administrative ratios increase as organization size increases tend to be longitudinal and hence of a more powerful design. Concentrating on the school district studies (for most non-school studies are cross-sectional), inverse relationships appear in Bidwell and Kasarda (1975), Holdaway and Blowers (1971), Hendershot and James (1972), and Lindenfeld (1961)--all of which used cross-sectional analysis. When longitudinal analyses are examined, the reported associations change. Positive relationships be-

tween administrative growth and organization growth can be found in Anderson and Mark (1977) and in Gittell and Hollander (1968). In addition when Holdaway and Blowers re-analyzed their findings across a five-year period, they report no consistent relationship, either negative or positive. Hendershot and James (1972) also re-analyzed their data across time and found that administrative-production ratios decreased only in those districts which had recently been experiencing significant growth; districts with moderate growth showed that the numbers of principals and supervisors increased more than the number of teachers. They argue that teaching staffs are more responsive to increases in enrollment, as they are directly involved with students (a shortage of teachers being readily apparent) and that while growth in enrollment is closely followed by growth in teaching components, administrative growth lags behind.

> This interpretation suggests that low administrative-production ratios may be, in many cases, transient phenomena, the result of recent history of rapid growth. With more moderate growth rates the "normal" relationship between administration and production will be reestablished by increase in the relative numbers of the former (p. 151).

To review this section, the dominant approach to account for growth in administrative components is one which looks to size of organization to drive the system. While some evidence suggests that administrative components increase at a slower rate than organization membership, the weight of evidence from school district studies suggests the opposite hypothesis, that as schools increase in enrollment, the size of the administrative component increases at a greater rate than the teaching component. Consequently, the appropriateness of applying the general organization size theory to schools come into question.

2) Environmental Complexity

An Alternative theoretical framework to that of using organizational size as an explanation for the growth of administrative components is one which looks to the complexity of the organization. This section presents a discussion of two dimensions of organization complexity: first, the complexity of the organization's structure; and second, the complexity of the organization's environment.

The first perspective posits that certain structural aspects of organizations (such as administrative components) are influenced by the complexity of other structural characteristics. Increased administrative presence, then, might be accounted for by increasing organization complexity (Blau and Scott, 1962), where complexity is viewed as: the degree to which facilities of the organization are scattered, or spatial dispersion (Hall, Haas, and Johnson, 1967); quality of program (Hawley, Boland, and Boland, 1965); and number of job titles, or specialization of labor (Blau, 1972).

There are several problems with this approach, both conceptual and empirical, for the study of schools. To begin, (as will be discussed below), it is difficult to discuss organizations independent of their environment. Second, the problem of causal direction is significant: for example, do numbers of subunits cause the administrative staff to increase, or does the administrative increase result in more subunits?

A final concern lies in the conceptual independence of internal complexity and organization size. They are analytically separate since it is possible to conceive of a large organization (such as a warehouse) being considerably less complex in terms of its division of labor or hierarchical differentiation than a smaller organization (such as a research firm). Empirical support for this claim can be found in Anderson and Warkov (1961), where certain smaller hospitals provided a greater variety of services than certain larger hospitals. This suggests that those studies supporting a relationship between administrative ratios and internal complexity (Anderson and Warkov, 1961; Blau, 1972; Rushing, 1973) are measuring some phenomenon (complexity) which is not simply a proxy for size.

However, this does not appear to be the case for school districts, as size and internal complexity are strongly linked. Following an analysis of the internal complexity of organizations suggested by Charters, Reiss reports that in a

sample of 45 Oregon school districts, size and complexity (division of labor, hierarchical differentiation, and spatial dispersion) were highly correlated (1970). Consequently, this approach--examining the relationship of internal complexity to administrative growth--does not appear helpful in the study of school organizations.

An alternate theoretical framework to that which used internal complexity of organizations as an explanation for the growth of administrative components is one which looks to the environment, or setting, in which the organization functions. Pugh and associates write that "The structure of an organization is closely related to the context within which it functions and much of the variation in organization structures might be explained by contextual factors" (1973, p. 62). They conceptualize structure as being influenced by factors external to the organization, such as location and resources, and refer to these as Contextual Variables. Contextual Variables, then influence Structural Variables, such as the organizing of activities, concentration of power, and relative size of the support component.

This work builds on that of Eisenstadt, who suggested that "structural characteristics do not, however, develop in a social vacuum, but are closely related to the functions and activities of the bureaucratic organization in its environment" (161, p. 270). Eisenstadt views bureaucratic organizations as influenced by external resources and external power; while not explicit regarding examples of them, he locates resources and power conceptually in terms of how "A bureaucratic organization attempts to control different parts of its environment and to adapt its goals to changing environments or to different ways in which groups outside the bureaucracy control and direct its activities" and that these processes "indicate the great interdependence existing between the bureaucratic organization and its social environment (p. 273).

It is, however, conceptually difficult to separate an organization from its environment. Blau and Scott state that because the environmental conditions and organizational

characteristics are so closely connected, "The boundary between an organization and its social context is never entirely clear" (1962, p. 194). In a similar vein, Starbuck writes that "One can say nothing about an organization without saying something about its environment, and an organization's need for satisfactory relationships with its environment is inescapable (1965, p. 467-8).

The focus of this study, however, is on the formal organization, not its environment. The reasons are relatively straightforward: first, the intent of this research is to understand certain processes of school organizations (such as staffing patterns), and second, it is beyond the scope of this research to examine the total environment of school districts, for as Dill writes:

> We seldom have enough data to do an adequate job of this. Instead, we can view the environment as it affects the organization which we are studying. We treat the environment as information which becomes available to the organization or to which the organization, via search activity may get access (quoted in Starbuck, 1965, p. 468).

What types of environmental influences come to effect administrative components? In a study of Norwegian business firms, Dill examined the "ways in which environmental factors constrain the structure of organizations and the behavior of organizational participants" (1973, p. 104). While his dependent variable, mamgeral autonomy, is not directly related to the present discussion, he did identify several environmental influences which are of interest. Customers exerted considerable influence on the two firms (Alpha and Beta) as did suppliers of materials, equipment, and capital. Another influence was that of regulatory groups (unions, interfirm organizations, and government). Finally, competitors were considered an influence, albeit indirectly.

The usefulness of this scheme for an analysis of school district administration lies in analogous influences exerted upon schools. A school district's clients (usually children or their families) are similar to customers of a firm, in that they make demands for services; similarly,

Alpha and Beta needed to be sensitive to the concerns of suppliers of capital and material, much as schools need to be aware of the interests of suppliers of funds (such as federal agencies), as well as being aware of regulatory agencies (such as state departments of education). The last category, competitors, is of minimal influence on school districts, which seldom are concerned with competition from neighboring districts or independent schools.

One approach to conceptualizing these influences might be in terms of the environment's complexity. Dill uses the notion of "task environment" in which stimuli received from the environment influence organization characteristics. A similar notion is developed by Thompson, who writes that organizations seek to buffer their cores against the fluctuations of an uncertain environment, in that uncertainty makes it difficult for organizations to operate smoothly (1967). A

disruption caused by an irregular market is undesireable, and consequently, raw materials may be stockpiled (or products stockpiled) so that external fluctuations are controlled; these types of input-output transactions require additional managerial or administrative staff.

Hannaway builds on this notion of Thompson's and writes that the "greater the variablity and heterogeneity of the environment, the larger the number of administrators or administrative units to stabilize input and output transactions" (1978, p. 417). Thus, factors discussed previously (resources, clients, regulations) might increase the variability, or complexity, of the environment to which the organization needs to respond. One response is to increase administrators to trouble-shoot, or to develop programs (which need to be administered). The general hypothesis of this framework, then, is that greater complexity in an organization's environment is related to larger administrative ratios.

General organization evidence. This area is not as well-researched as the organization size area.

Hawley, Boland, and Boland (1965), studying tax-supported, four year institutions of higher learning in the United States, used operating budget as a measure of resources available to the organization; they found that it was highly correlated with the size of the administrative staff, indicating that institutions with larger budgets have larger administrations. But that is closely related to size of the organization. Another study conducted by Noell (1974) examined the relationship of state government bureaucracies to the social systems of the fifty states in which they operated.

His dependent variable (relative size of the bureaucracy) was defined as the number of local and state government employee full-time equivalents per 10,000 citizens. Of interest to this discussion are his findings that size of bureaucracy (the proportion) and measures of the complexity of the social structure in which the bureaucracy is located are related. He reports correlations of .40 between his state government bureaucracy ratio and wealth of the population (resources) and .35 between the bureaucracy ratio and societal complexity (composed of measures of:

urbanization, ethnicity, black population, industrialization, and level of education of the citizens).

School district evidence. In a study of 823 California school districts, Hanraway (1977) examined the influence of external funding upon the numbers of administrators, non-administrative professional support staff, and non-professional support staff. Not only did she find that external funds influenced the size of these personnel components, but also that federal funds were more influential than either local or state funds; specifically, regression coefficients indicate that $10 million in federal dollars is associated with an increase in 9 administrators, while equivalent amounts of state and local dollars are associated with, respectively, three and two administrators.

Bidwell and Kasarda's (1975) study of 104 Colorado school districts was concerned with relationships between environmental conditions, organizational attributes, and student achievement (as discussed earlier). Two organizational measures, administrative ratios and professional support staff ratios, were hypothesized to be related to environmental conditions, measured by fiscal resources, levels of

education of parents, percentage of nonwhite students, and percentage of economically disadvantaged students. Using Thompson's buffering rationale, they reasoned that increased fiscal resources would provide more services which would need to be managed and administered, and that a diversity of clients (percentage of nonwhite students and percentage of disadvantaged) would indicate increased demands made upon school district officials for, perhaps, special programs.

Their findings were that fiscal resources and professional support ratios showed a correlation of .203 and that percentage of disadvantaged students and administrative ratios showed a correlation of .286. While these correlations are modest, they are positive, and suggest a relationship between certain external factors and staff ratios.

To summarize briefly, it is likely that staff ratios are related to the complexity of school organizations. While the structural (or internal) complexity of school organizations seems to be strongly related to enrollments, the environmental (or external) complexity of school districts is not necessarily related. Specifically, measures of fiscal resources available to school districts and measure of client diversity seem to be related to larger relative support components.

Discussion. The environmental complexity approach is conceptually more compelling than the organization size approach in that it hypothesizes specific influences (such as types of clients) on administrative growth, as opposed to the general variable of size which, while easily measured, is likely a proxy standing in for factors unspecified. The complexity framework, in specifying possible influences, would bring us closer to understanding what factors were related to administrative growth.

In addition, an environmental complexity approach is conceptually independent of organization size. While measures of internal complexity appear

to be related to number of pupils in public school districts, this is not the case with environmental variables; for example certain, small districts might have higher percentages of ethnic/racial minority students than certain larger districts.

Finally, interviews conducted with district superintendents from within the study population (as well as from another state) show that they accept the position that environmental complexity causes increases in administrative personnel.[6]

From a theoretical perspective, the complexity postion--while more rich in explanation than the size position--suffers from the same deterministic underpinnings. This perspective assumes organization

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6A complete analysis of these interviews is currently being undertaken by the author. In addition to believeing that the environment influences school district organization structure, the superintendents strongly rejected the notion that decreasing support ratios either are or ought to be associated with increasing enrollments (the Organization Size approach). The overwhelming opinion, in Weberian fashion, was that increasing size yields increasing complexity which would necessitate increasing percentages of administrators. Explicitly rejected was the industrial model in which decreasing proportions of managers was probable, or even desireable.

structures merely respond to external stimuli: the input-output character of this approach precludes the possiblity of alternatives. It is important to emphasize the problematic nature of human beings in organizational settings, as suggested by informal organization patterns, such as those Roethlisberger and Dixon (1939) examined at the Hawthorne Works, or some of the unanticipated consequences of bureaucratization examined by Gouldner (1955) at the gypsum plant, or Weick's (1976) loose-coupling. It is quite likely that organization members will respond in a variety of ways to, for example, a given change in federal funding.

Moreover, the empirical findings reviewed in this section need be interpreted with some caution. To begin, there are, relative to the organization size framework, few available. In addition, studies suffer from problems similar to those of the Organization Size studies: cross-sectional design and lack of comparable definitions of dependent and independent variables.

Variables in the Study

In this section, the variables to be studied will be discussed. The first part of this section, however, will present a discussion of the unit of analysis.

The Unit of Analysis

This research looks to the public school district as the appropriate unit of analysis for study. First, schools as formal organizations tend to have relatively flat tables of organization (Bidwell and Kasarda, 1975), with less vertical differentiation of staffing than occurs within a district; central offices, for example, typically have more levels of hierarchy than would exist within a school. In addition, it is difficult in a school-level analysis to assign district-level administrators to individual schools, unless they were to be divided evenly; the assumption that district administrators divide their time evenly across schools would be difficult to sustain.

Moreover, policies regarding structural characteristics of school organization are typically located at the district level, as "budget-making, which affects such things as the differential allocation of resources between functions (e.g., teaching versus non-academic

services) or between schools is a central office and school board responsibility" (Bidwell and Kasarda, 1975, p. 56). Thus, there is likely to be less variance between individual schools within a given district than there would be between districts.

Dependent Variables

This study will examine influences upon the proportion of indirect, or support personnel (typically administrators) to direct, or production personnel (typically teachers); this ratio of administrator-to-teachers is broadly referred to as the support ratio, as it assumes that the operational unit in public schools is the classroom, and that the classroom teacher is supported by other professionals (superintendents, principals, librarians, etc.).

Administrative Ratio is the ratio of superintendents, supervisors, and principals to teachers; this includes various assistants and associates of each class.

Professional Support Ratio is the ratio of librarians/media directors, guidance counselors, and pupil personnel to teachers; are the certificated professionals in the population of school dis-

tricts studied, and do not include other indirect, or support personnel, such as bus drivers or clerical workers.

The primary distinction between Administrative components and Professional Support components lies in managerial functions. Administrators typically make hiring/firing decisions, while Professional Support personnel typically report to Administrators. A notion of staff and line operates here. An additional distinction is that Professional Support personnnel often provide more direct support to classroom activities than would, for example, principals or superintendents. These definitions are broad, and are used in this study as a first cut at looking into organizational structure. For example, some assistant principals work directly with students (which funtionally, then, makes them appear similar to teachers). Consequently, future refinement is necessary. In addition, there are several debates regarding the use of ratio data Briefly, Heydebrand (1973) argues that the use of a ratio masks possible differences in organizational processes, while Hannan and Freeman (1975) argue that the components of the ratio might respond differently to the same influence. The intent of this research is to study the changes in the relationship between staff components, and the question of examining organization processes are beyond the scope of this study.

Independent Variables

Organization Size. While school district size might be measured by characteristics such as budget or the size of the population served by the district (including, for example, adults), this research uses the notion of cui bono or prime-beneficiary developed by Blau and Scott (1962), in which organizations are placed into a typology of which clients gain the most from the organization's activities. Schools, then, are Service organizations (such as hospitals) and the clients are students, rather than, for example, parents or future employers. The number of students will be considered to be those who enroll, as opposed to a measure of average daily attendance, because planning for staff is based upon enrollment projections.

Environmental Complexity. As was discussed previously, Environmental Complexity might be thought to consist of resources available to the school district and client diversity. Resources available to the school district will be the number of federal dollars per student per year as well as the number of local dollars per student per year. Client diversity will consist of a measure of social class of students (the percentage of

students from families receiving Aid to Families with Dependent Children) and a measure of ethnic and racial diversity (the percentage of minoriy students,) with minorities considered as Black, Spanish-surnamed, Oriental, and Native American students).

This study will examine the usefulness of the Organization Size approach as well as the Environmental Complexity approach by testing a variety of hypotheses derived from these theoretical stances. The Organization Size approach is examined by the following general hypothesis:

> If the organization's size increases, then the relative size of its support staff decreases.

The Environmental Complexity approach will be tested by the following general hypothesis:

> If the complexity of the organization's environment increases, then the relative size of its support staff increases.

Following a discussion of the study population, research design, and methodology, the specific hypotheses drawn from these general hypotheses will be presented along with major findings.

The study population

Forty-three K-12 public school districts in eastern Missouri were selected, representing all districts in the counties of Saint Louis, Saint

Charles, Jefferson, Franklin, add the City of Saint Louis. The intent was to study districts which would not, a priori, offer reasons for being considered atypical. For example, the Special School District of Saint Louis County (which enrolls students with learning disabilities) was excluded due to its strikingly large proportion of support personnel relative to teaching personnel.

The Saint Louis metropolitan area, which represents the region in which these districts are located, is composed of a declining urban core, older established suburbs, newer and expanding suburbs, and rural areas. The enrollments of the school districs ranged from a low of 406 to a high of 582; however, when the population of means of all districts per year (that is, nine means, one per year) are examined, the lowest mean is 7648 and the highest was 8548, with 27 of the 43 districts having enrollments between 2000 and 9000.

Data

Information on personnel (such as job position) in the 43 districts was obtained from a file

maintained by the State of Missouri's Department of Elementary and Secondary Education (DESE). This file is the data base from which DESE works, for example, in deciding school district classification.

In addition to the DESE file, documents such as the Missouri School Directory as well as the Report of the Public Schools of Missouri provided information such as enrollments or sources and amounts of funding. Additional information (such as number of children per district from homes receiving AFDC) was secured from DESE and numbers of minority children were provided by the Office of Civil Rights, US Department of Health, Education, and Welfare.

Design

The review of the literature suggests that studies of administrative growth fall into two categories: cross-sectional or longitudinal. Consequently, this study will examine the Organization Size and the Environmental Complexity approaches in two parts. First, the districts

will be examined cross-sectionally; second, a longitudinal approach will be employed.

To aid the statistical analysis of these hypotheses, a file was constructed including information on each district in each of the years from 1968 through 1976. The primary statistical analysis will involve use of Pearson product-moment correlations. An indication of the relationship between variables, Pearson's correlation makes no inference regarding causal direction. As this study is concerned with inferences as to influences upon the relative size and growth of support components, certain considerations regarding causal influences are applicable.

To this end, a lagged model is employed. While

we might examine the relationship between enrollments and administrative ratio in a given year, it is quite possible that it takes one or more years for administrative ratios to be influenced by enrollments. Consequently, correlations are obtained, for example, between administrative ratios an 1975 and enrollments in 1974; while the statistic is still correlational, a causal direction becomes plausible to infer. This is especially the case as there is no suggestion in the literature that organization size is influenced by administrative ratios; while an argument might be constructed to hold that relative increases of administrators result in larger enrollments, there is no support for this in the literature. Therefore, tentative causal directions might be inferred, albeit with considerable caution.

MAJOR FINDINGS

This section will present the hypotheses tested and the major findings of the study. The findings will be presented in terms of the two categories of the study: cross-sectional analysis and longitudinal analysis.

Cross-sectional Analysis

The first hypothesis tested refers to the Organization Size approach, and takes the general form:

$H_{1.1}$ Larger school districts will have smaller support ratios than smaller school districts.

The results appearing in Table 3 are in terms of both Administrative Ratios as well as Professional

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INSERT TABLE 3 ABOUT HERE

Support Ratios, and are lagged for three years. Thus, coefficients displayed for the correlations between, for example, Professional Support Ratios in 1971 and 1971 enrollments, as well as enrollments in the three previous years. The predicted relationship was negative; Table 3 shows that most of the relationships were positive (although not significant at the .05 level); consequently the hypothesis that larger districts have smaller support ratios is not accepted.

The Environmental Complexity theory is examined cross-sectionally by two general hypotheses.

TABLE 3
CORRELATION COEFFICIENTS OF ENROLLMENTS WITH ADMINISTRATIVE RATIO AND PROFESSIONAL SUPPORT RATIO FOR 43 PUBLIC SCHOOL DISTRICTS

		Enrollments								
		1968	1969	1970	1971	1972	1973	1974	1975	1976
1971	AR[1]	.114	.120	.127	.136					
	PSR[2]	.159	.162	.160	.167					
1972	AR		.092	.101	.109	.092				
	PSR		.254	.254	.260	.253				
1973	AR			.005	.013	.000	.019			
	PSR			.038	.037	.031	.044			
1974	AR				.100	.089	.111	.118		
	PSR				-.064	-.076	-.062	-.060		
1975	AR					.078	.098	.104	.109	
	PSR					.191	.206	.206	.205	
1976	AR						.066	.073	.076	.086
	PSR						.068	.066	.076	.071

[1]Administrative Ratio
[2]Professional Support Ratio

$H_{1.2a}$ School districts with higher levels of resources available will have larger support ratios than districts with lower levels of resources.

This hypothesis examines the relationship between amounts of federal dollars per capita and amounts of local dollars per capita, respectively, with Administrative Ratios and Professional Support Ratios, as displayed in Table 4.

INSERT TABLE 4 ABOUT HERE

The hypothesized relationship between each of the four pairs of variables implied by the general hypothesis is positive. It would appear from Table 4, however, that the relationship between the two types of resources and the two support ratios is not positive; in fact, almost half of the correlations are negative and significant at/beyond .05.

A related hypothesis is

$H_{1.2b}$ School districts with higher levels of client diversity will have larger support ratios than districts with lower levels of client diversity.

TABLE 4
CORRELATION COEFFICIENTS FOR
FEDERAL DOLLARS/STUDENT AND FOR LOCAL DOLLARS/STUDENT WITH
ADMINISTRATIVE RATIOS AND PROFESSIONAL SUPPORT RATIOS FOR
43 PUBLIC SCHOOL DISTRICTS[1]

		Local Dollars/Student			Federal Dollars/Student				
		1973	1974	1975	1971	1972	1973	1974	1975
1971	AR[2]				-.266				
	PSR[3]				-.178				
1972	AR				-.315*	-.318*			
	PSR				-.090	.045			
1973	AR	-.288			-.338*	-.282	-.069		
	PSR	-.522*			.009	.124*	.228		
1974	AR	-.430*	-.435*			-.321*	-.128	-.156	
	PSR	-.409*	-.396*			.138	.057	.145	
1975	AR	-.400*	-.375*	-.365*			-.116	-.141	-.429*
	PSR	-.518*	-.539*	-.528*			.046	.033	-.282
1976	AR		-.037*	-.339*				-.120	-.295
	PSR		-.458*	-.469*				.111	-.198

[1]Data not available for all years
[2]Administrative Ratio
[3]Professional Support Staff Ratio
*Significance < .05

This hypothesis examines the relationships between the two support ratios and measures of client diversity, specifically, client social class (percentage of students from families receiving Aid to Families with Dependent Children) and racial/ethnic diversity (percentage of minority students). The results appear in Table 5.

INSERT TABLE 5 ABOUT HERE

As in the hypothesis regarding resources available to the school district, the Environmental Complexity theory would suggest a postive relationship. Once again, the correlations are generally non-significant, with those significant at/beyond .05 being negative. Strong support for a positive relationship is not provided by these data, and the hypothesis is not accepted.

Longitudinal Analysis

The second part of the analysis looks at the relationship betwen changes in, respectively, Organization Size or Environmental Complexity, and support ratios. The intent is to trace organizational structures over time and as before, a lagged model is employed.

TABLE 5

CORRELATION COEFFIECIENTS FOR
PERCENTAGE OF AFDC STUDENTS AND PERCENTAGE OF MINORITY STUDENTS WITH
ADMINISTRATIVE RATIOS AND PROFESSIONAL SUPPORT RATIOS FOR
43 PUBLIC SCHOOL DISTRICTS[1]

		Percentage of AFDC Students					Percentage of Minority Students		
		1971	1972	1973	1974	1975	1970	1972	1976
1971	AR[2]	-.292					-.280		
	PSR[3]	-.162					-.109		
1972	AR	-.373*	-.284				-.348*	-.340*	
	PSR	-.141	-.028				..005	-.007	
1973	AR	-.327*	-.278	-.272			-.334*	-.340*	
	PSR	..077	.038	.009			-.060	-.080	
1974	AR		-.304*	-.305*	-.288			-.363*	
	PSR		-.028*	.021	.028			.006	
1975	AR			-.297	-.281	-.227			
	PSR			-.068	-.055	.080			
1976	AR				-.204	-.169			-.381
	PSR				.006	.022			-.130

1Data not available for all years
2Administrative Ratio
3Professional Support Ratio
*Significance $< .05$

The first hypothesis refers to the Organization Size theory:

$H_{2.1}$ If school districts increase in size over time, then support ratios will decrease.

The results of testing this hypothesis, using changes in Administrative Ratios and changes in Professional Support Staff Ratios, correlated with changes in enrollments, are displayed in Table 6. The predicted relationships are

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INSERT TABLE 6 ABOUT HERE

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negative: while negative correlations do appear in Table 6, only one of them is significant at/beyond .05. The remaining coefficients cluster around zero, indicating a lack of relationship between the variables. Consequently, the inverse relationship hypothesized to exist between decreasing support ratios and increasing enrollments is not accepted.

Longitudinal analysis of the Environmental Complexity theory is tested by two general hypotheses:

$H_{2.2a}$ If school districts increase in levels of resources over time, then support ratios will increase.

The results of testing this hypothesis are presented in Table 7, where

TABLE 6
CORRELATION COEFFICIENTS FOR CHANGES IN ENROLLMENTS WITH CHANGES IN ADMINISTRATIVE RATIOS AND CHANGES IN PROFESSIONAL SUPPORT RATIOS IN 43 PUBLIC SCHOOL DISTRICTS

		Change in Enrollments							
		1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76
1971-72	AR[1]	-.060	.103	.040	-.213				
	PSR[2]	-.060	.001	-.103	-.093				
1972-73	AR		.029	.114	-.033	.028			
	PSR		.050	.122	-.063	.072			
1973-74	AR			-.041	.136	-.035	-.013		
	PSR			.180	-.099	-.003	-.134		
1974-75	AR				.073	-.061	-.017	-.098	
	PSR				.293[3]	-.088	.298[4]	-.374[5]	
1975-76	AR					.058	.045	.015	.130
	PSR					.023	.104	.149	.208

[1]Administrative Ratio
[2]Professional Support Ratio
[3]Significance = .056
[4]Significance = .052
[5]Significance = .013

INSERT TABLE 7 ABOUT HERE

changes in local dollars per capita as well as changes in federal dollars per capita are correlated with changes in Administrattve Ratio and changes in Professional Support Ratio. While a positive relationship would be predicted, a reading of Table 7 would not lend support. Not only do numerous negative correlations appear, but only one of the positive correlations is significant at/beyond .05. Consequently, the hypothesis is not accepted.

A similar hypothesis is

$H_{2.2b}$ If school districts increase in levels of client diversity over time, then support ratios will increase.

The results of testing this hypothesis are displayed

INSERT TABLE 8 ABOUT HERE

in Table 8, where changes in percentages of AFDC

TABLE 7

CORRELATION COEFFICIENTS FOR CHANGES IN FEDERAL DOLLARS/STUDENT AND FOR CHANGES IN LOCAL DOLLARS/STUDENT WITH CHANGES IN ADMINISTRATIVE RATIOS AND CHANGES IN PROFESSIONAL SUPPORT RATIOS FOR 43 PUBLIC SCHOOL DISTRICTS[1]

		Changes in Local Dollars/Student		Changes in Federal Dollars/Student			
		1973-74	1974-75	1971-72	1972-73	1973-74	1974-75
1971-72	AR[2]			.090			
	PSR[3]			-.085			
1972-73	AR			.215	.159		
	PSR			-.067	/148		
1973-74	AR	-.039		.058	-.078	.070	
	PSR	.134		-.008	-.200	.096	
1974-75	AR	.406*	-.165		.063	.017	-.117
	PSR	-.236	-.082		.048	-.125	-.007
1975-76	AR	.008	-.113			-.108	/351*
	PSR	.160	-.113			.062	.089

[1]Data not available for all years
[2]Administrative Ratio
[3]Professional Support Ratio
*Significance ∠ .05

TABLE 8

CORRELATION COEFFICIENTS FOR
CHANGES IN PERCENTAGES OF AFDC STUDENTS AND CHANGES IN PERCENTAGES OF MINORITY STUDENTS WITH CHANGES IN ADMINISTRATIVE RATIOS AND CHANGES IN PROFESSIONAL SUPPORT RATIOS IN 43 PUBLIC SCHOOL DISTRICTS[1]

		Changes in Percentages of AFDC Students				Changes in Percentages of Minority Students	
		1971-72	1972-73	1973-74	1974-75	1970-72	1972-76
1971-72	AR[2]	.170				-.013	
	PSR[3]	-.035				.229	
1972-73	AR	.014	-.002			-.174	
	PSR	-.265	-.108			-.063	
1973-74	AR	.031	-.053	.048		.054	
	PSR	.012	.136	.105		.081	
1974-75	AR		.031	-.064	-.128		
	PSR		-.098	.023	.070		
1975-76	AR			-.015	-.148		-.201
	PSR			-.166	-.023		-.092

[1] Data not available for all years
[2] Administrative Ratio
[3] Poofessional Support Ratio

students as well as changes in percentages of minority students are correlated with changes in Administrative Ratio and changes in Professional Support Ratio. Again, negative correlations not predicted by an Environmental Complexity approach appear, and the positive correlations (predicted) are not significant at .05. Consequently, this hypothesis is not accepted.

SUMMARY, CONCLUSIONS & IMPLICATIONS

Summary

To review briefly, the research problem discussed in this paper was to explain the growth in support components in public school districts. This growth is of interest because there is no consistent and unambiguous body of evidence to show that increasing administrative or professional support presence in school districts actually increases organizational effectiveness; to the contrary, not only are higher costs associated with increasing support personnel relative to teaching personnel, but some evidence suggests that increasing administrative presence is associated with a decline in student achievement.

A review of the literature on organizations in general, and schools in particular, suggests two major categories of explanations for growth in support components: the Organization Size theory and the Environmental Complexity theory. The former suggests that as the size of an organization increases, the proportion of managerial or administrative personnel to production

personnel will decrease. The Environmental Complexity theory views increasing support personnel (relative to production personnel) as related to the increasing complexity of the organization's environment, as in the form of increasing resources available to the organization, or increasing demands made by diverse client groups.

Neither of these approaches, however, is consistently able in other studies to explain growth in public school support components. Consequently, the growth of these indirect components--which, while adding costs, cannot be clearly linked to organizational effectiveness--is not well explained by the predominant theories in the literature.

This study investigated growth of support components in 43 K-12 public school districts in the Saint Louis metropolitan area. Administrative components (superintendents, principals, and supervisors) as well as professional support components (librarian/media directors,

guidance counselors, and pupil personnel), relative to teaching personnel, were studied for the years 1968-1976.

Major Findings

I. Organization Size

The first theory examined suggests the following hypothesis:

> As organization size increases, support ratios decrease.

This hypothesized relationship was examined for both Administrative Ratios and for Professional Support Ratios, in terms of student enrollments Cross-sectionally and longitudinally, it appears that:

1) There is essentially no relationship between student enrollments and support ratios (larger school districts do not have smaller support ratios as the theory would predict.

2) There is essentially no relationhsip between growing student enrollments and support ratios (expanding schools districts do not necessarily have declining ratios of support personnel to teachers).

II. Environmental Complexity

The second theory, Environmental Complexity, suggests the following two general hypotheses:

As resources available to an organization increase, support ratios increase.

As an organization's clients become more diverse, support ratios increase.

Both of these hypotheses were examined cross-sectionally and longitudinally, for Administrative Ratios and Professional Support ratios, and it appears that:

1) Levels of local dollars/capita and levels of federal dollars/capita appear to be unrelated to the size of support ratios.

2) Growth in these two measures of resources is similarly unrelated to growth in support ratios.

3) Percentages of children from homes receiving Aid to Families with Dependent Children as well as percentages of minority children appear unrelated to the size of support ratios.

4) Growth in these measures of client diversity appears unrelated to growth in support ratios.

Conclusions and Implications

Several generalizations might be pulled from these data. To begin, it appears that

larger organizations do not have smaller support ratios than smaller organizations (neither do growing organizations have declining support ratios): these generalizations suggest that attempting to explain growth in support ratios through an examination of enrollments is not very useful. Second, it appears that support ratios and growth in support ratios is not related to amount of funds available to school districts, percentage of AFDC students, percentage of minority students, or growth in these measures; moreover, using these variables to account for administrative size and growth is similarly not very useful.

There are several possible reasons why there is difficulty in accounting for size and growth of support compnnents using the explanations suggested by the Organization Size and the Environmental Complexity theories. To begin, organization theory has typically been concerned with growth: decline is not adequately understood. It is clear, for example, growth

and bigness have long preoccupied American thought.. As Allan Easton writes:

> The American business ethos assigns high positive valuation to growth. Just as children yearn to grow into adults, so do ambitious managers hunger to enlarge their operation or move into large areas of responsiblity, power, and influence. It is more prestigious to be the general manager of a subsidiary employing 10,000' people than of one with a mere 1000...A company president whose firm's sales, profits, size of plant, share of market, number of employees of total assets are not increasing more or less regularly will undoubtably be seen by himself, and by his peers, as being neither successful nor very dynamic. (1976, p.3).

So it goes with our organizational literature where growth is viewed as part of the normal course of affairs: In James March's well-known Handbook of Organizations, William Starbuck's comprehensive artic le (touching on several issues raised in this paper) is characteristically entitled, "Organization growth and development." Even Easton's work, among the few explicitly addressed to the problems of declining organizations, nonetheless, is entitled Managing for Negative Growth. Growth, then is what organizations do...even when that growth is negative.

But organizations do go into decline, and the lack of concern with this process limits the power of our theory, add the potency of our management practice. The Organization Size hypothesis (that managerial ratios decrease as firm size increases) is seldom, if ever, posed in the converse: there is little concern with firms in decline.

The lack of adequate models of declining organizations is of especial importance to educational organizations within the present (and most likely, future) context of contracting public education. While demographic projections as to birth-rates differ, the combination of fewer students and fewer available revenue dollars is likely to lead to increasing leanness of educational operations. Turnover-rates of teachers are decreasing and school districts are beginning to have staffs composed predominantly, or entirely, of tenured personnel; strategies of staff reduction through attrition or through laying-off of non-tenured personnel are being replaced by laying-off of tenured faculty. Decline

is likely to be the norm in the future, and our organization theory is of questionable help in understanding this phenomenon.

The second point is that both explanations studied in this paper attempt to account for size and growth in support staffs without actually examining those support staffs; rather, influences upon support personnel are studied, rather than the phenomenon of interest itself.

Both theories make assumptions of "demand" (Freeman and Hannan, 1975). A demand argument assumes that as the number of students would increase, a demand is created for more teachers; as a consequence, the teaching staff would increase. Conversely, a decrease in enrolment would cause less need for teachers, and the teacher force would be reduced. Similarly, as a school district becomes increasingly complex, more administrators would be taken on; as programs were discontinued, fewer administrators would be needed, and the size of the administrative staff would diminish. In both arguments (Organization Size

and Environmental Complexity), the focus is on phenomena external to the support component, which is conceptualized as responding to some force, such as the membership of the organization or the nature of its environment. Hannaway (1978) argues persuasively that understanding of administrative growth will come from studying administrative components, that there are characteristics of administrative components which cause growth. From this perspective, the growth in administrators and professional staff observed in this study, growth seemingly unaccounted for by theories of organizational size or environmental complexity, becomes understandable in terms of dynamics within the support staffs themselves.

When the actual support components of organizations are examined, the problematic behavior of members of formal organizations might be recognized: managers are not seen as being lodged within a black box, where given

certain inputs (such as client diversity), certain outputs lawfully follow. There is then, an interaction between environmental influences and, managers' personal agendas.

For example, Parkinson notes that while the Royal Navy between 1914 and 1928 reduced the number of capital ships in commission by 65% and the number of officers and enlisted personnel by 32%, the number of Admiralty officials increased by 79% (Parkinson, 1957). He also notes that while dockyard workers increased by 10%, dockyard officials and clerks increased by 40%.

There are two phenomena here. The first is that when an organization (such as the dockyard) increase in membership, the managerial or bureaucratic component increases at a faster rate. This would be consistent with the dramatic increases in support staffs observed in expanding school districts.

The second point refers to what Haire termed "the remarkable resistance of the staff to negative growth" (1959, pp.292-93). In the Royal Navy, despite the reduction of the "production"

components (ships and sailors), the support staffs increased. Haire reports that in his study of four firms, 325 workers were furloughed or fired while 14 staff members were hired. And finally, Parkinson notes that between 1935 and 1954, when Great Britain was presumably in the throes of dismantling an Empire, the Colonial Office increased from 372 officials to 1661.

Parkinson's explanation is that officials, by increasing managerial subordinates and colleagues cause more administrative work (meetings, memos, communications and coordination) which adds on still more officials.

A related issue to that of a tendency to resist negative growth is the question of choice in the laying-off of personnel. Both the Organization Size approach and the Environmental Complexity approach make assumptions regarding members' actions; specifically, assumptions are made that, for example, managers will be released when their program ends. However, Pondy (1969) reports that owner-managed firms have lower administrative ratios than professionally-managed firms; his explanation is that the reduced costs of the lower ratios accrue to owners as profits, while the professional managers do not directly receive the benefits of reducing costs. Thus, professional managers might be willing to accept higher administrative ratios because they receive other types of benefits, such as building of a power base. It is also more difficult to release colleagues with whom one works daily, than workers elsewhere in the organization. Easton quotes an executive as saying:

> I just dictated a memo to the head of personnel ordering him to send lay-off notices to over five hundred or our people... Imagine that?...Five hundred jobs up in smoke for who knows how long? But you know, I didn't feel a thing in here... But when I get back to the office, I have to tell my PR man, Howie Mason, that he's fired...Damn it, I can't bring myself to do it (1976, p. 73).

Implications for Research and Educational Practice

Research. The primary research implication of this study is that the growth in public school support components relative to teaching components might be further explored by an examination of these support components. It would be useful to know, for example, how school administrators react to decreasing enrollments or increasing percentages of minority of students. What do they do, and why? As school districts appear to be in a period of decline, understanding managerial behavior in this context should be of major interest in the near future. Moreover, it would be useful to know the relationship between support personnel and school effectiveness: while there is data regarding

costs, and to a lesser extent achievement, other dimensions of school effectiveness need to be examined.

Educational Practice. Groups concerned with school governance, such as taxpayers, teacher organizations, state education agencies, and local school authorities would be interested in information about growth in school district support components. Public school administrators also would want to examine their personnel policies in light of these findings.

This is an extremely difficult period for our schools, and school ladders are under great pressure to maintain/increase school quality. The difficulties in managing school districts are legion, and hardly unique to schools as large formal organizations. The military, government, and health sectors of our society are also experiencing serious problems. We need to understand organizational characteristics of schools such as staffing, both in terms of how they come about, and what their influence is upon school quality.

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